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OCT 26 2011

10 CFR § 50.73
L-2011-359

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555-0001

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2011-001-01
Date of Event: March 6, 2011
Manual Reactor Trip Due to Secondary Sodium
Concentrations Exceeding Chemistry Limits

The attached Licensee Event Report 05000250-2011-001-01 (supplement) is being submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A) due to a valid manual actuation of the reactor protection system and associated manual reactor trip. The associated LER, submitted May 6, 2011, indicated that the cause was most likely due to a tube flaw in the tube-to-tube sheet interface of a tube in the 3BS tube bundle. The root cause analysis performed later concluded that the event was due to a tube flaw near the tubesheet interface of a tube in the 3BS tube bundle. High cycle, low stress fatigue, and cold work induced residual stresses likely contributed to the event. Therefore this supplement is being provided to amend the suspected root cause. If there are any questions, please call Mr. Robert J. Tomonto at 305-246-7327.

Very truly yours,

Michael Kiley
Vice President
Turkey Point Nuclear Plant

Attachment

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resourse@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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4. TITLE

Manual Reactor Trip Due to Secondary Sodium Concentrations Exceeding Chemistry Limits

6. LER NUMBER						7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
3	6	2011	2011	- 001 -	01	10	27	2011	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

23%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Ronald Everett	305-246-6190

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	SG	COND	F175	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

At approximately 11:35 on March 6, 2011, a sodium spike was detected in the 3AS hotwell. Subsequently the 3A1 and 3A2 circulating water pumps (CWP) were stopped. A rapid power reduction was commenced after a second sodium spike was experienced, in accordance with plant procedures 3-ONOP-100, "Fast Load Reduction", to approximately 23% power. A manual reactor trip was initiated per procedure at 16:44 (EST). Unit 3 was stabilized in Mode 3. All rods fully inserted and all safety systems functioned as required and there was no impact on the health and safety of the public. The NRC was notified of the event due to manual actuation of the Reactor Protection System [JC] (Event Number 46660) at approximately 19:38 (EST) on March 6, 2011.

The cause of the sodium intrusion event was due to a tube flaw near the tubesheet of tube [SG, COND] R305/T5 in the 3BS tube bundle. High cycle, low stress fatigue, and cold work induced residual stresses likely contributed to the event. Corrective actions involved plugging several tubes and applying an overcoat of Duromar after tube plugging. Eddy Current Testing was performed on a selected tube population. A combination of foam/dimple plug testing was performed. Several tubes in the 3AN and 3BS water boxes were plugged and coated. A root cause analysis was performed. Long term, the Unit 3 and Unit 4 condenser tube bundles will be replaced under the Extended Power Uprate Project.

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NARRATIVE

DESCRIPTION OF THE EVENT

At approximately 11:35 on March 6, 2011, a sodium spike was detected in the 3AS hotwell. Subsequently the 3A1 and 3A2 circulating water pumps (CWP) were stopped. However, approximately four hours after stopping the CWPs a higher sodium spike was detected again in the 3AS hotwell [SG] (3BS hot well sample pump was not in service.) At approximately 16:20 (EST), steam generator sodium concentrations exceeded 3-ONOP-071.1, "Secondary Chemistry Deviation from Limits" and 0-ADM-651, "Nuclear Chemistry Parameters Manual" as the sodium levels increased to greater than 250 ppb (action level 3). A rapid power reduction was commenced in accordance with plant procedures 3-ONOP-100, "Fast Load Reduction", to approximately 23% power. A manual reactor trip was initiated per procedure at 16:44 (EST). Unit 3 was stabilized in Mode 3. All rods [AA, ROD] fully inserted and all safety systems functioned as required and there was no impact on the health and safety of the public. The NRC was notified of the event due to manual actuation of the Reactor Protection System (Event Number 46660) at approximately 19:38 (EST) on March 6, 2011.

CAUSE OF THE EVENT

A root cause analysis was performed. The cause of the sodium intrusion event was due to a tube flaw near the tubesheet interface of tube R305/T5. High cycle, low stress fatigue, and cold work induced residual stresses likely contributed to the event. Corrective actions involved plugging several tubes and applying an overcoat of Duromar after tube plugging. Eddy Current Testing was performed on a selected tube population. A combination of foam/dimple plug testing was also performed. There was evidence of leakage near a tube-to-tubesheet interface [SG, COND]. Several tubes [SG, TBG] of the 3AN and 3BS water boxes were plugged and coated.

ANALYSIS OF THE EVENT

The sodium level increase led to the decision to shutdown the reactor in accordance with plant procedures and therefore is reportable under 10 CFR 50.73(a)(2)(iv)(A) as "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section." All systems operated as expected during the reactor shutdown and there was no impact on the health and safety of the public.

Plant and INPO OE items were reviewed for Turkey Point Unit 3 applicability.

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NARRATIVE

CORRECTIVE ACTIONS

Corrective actions involved plugging several tubes in water boxes 3AN and 3BS.

Long term, the Unit 3 and Unit 4 condenser tube bundles will be replaced under the Extended Power Uprate Project.

ADDITIONAL INFORMATION

EIIS Codes are shown in the format [IEEE system identifier, component function identifier, second component function identifier (if appropriate)].

SIMILAR EVENTS

Turkey Point Unit 4 had a condenser tube leak, LER 2010-008-00, that resulted in a manual plant shutdown on December 9, 2010.